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10/672,707	09/26/2003	Timothy J. Van Hook	00100.01.0022	1126

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EXAMINER

MOTSINGER, SEAN T

ART UNIT	PAPER NUMBER
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2624

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12/14/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/672,707	VAN HOOK ET AL.	
	Examiner	Art Unit	
	SEAN MOTSINGER	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-61 and 63-99 is/are pending in the application.
- 4a) Of the above claim(s) 14-33, 36-54 and 69-88 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-13, 34-35, 63-68 and 89-99 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Applicants Arguments/Amendments

Applicants Arguments/Amendments file don 9/27/2010 have been entered and made of record.

Regarding the rejections under 35 U.S.C. 112 claims 1-5, 8-13, 34-35, 63-68 were corrected and claims 89-99 were not completely corrected and still use "compression" in an ambiguous way.

Regarind the rejections Under 35 U.S.C. 101 applicants arguments have been fully considered but are not sufficient to overcome the rejection its not clear what exactly non transitory computer readable code even is. Computer code is an abstract idea and therefore it is not clear what it means for it to be "non transitory" the claims should be amended to include a non transitory computer readable medium.

Applicant's arguments with respect to the prior art have been considered but are moot in view of the new ground(s) of rejection.

Rejections Under 35 U.S.C. 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims, 55-61, 63-65, 67-68, 90 and 92 are rejected under 35 U.S.C. 101 because these claims claim a computer program product comprising a computer useable

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medium. This computer product could reasonable be construed to cover a transient signal. The broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals per se in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. See MPEP 2111.01. When the broadest reasonable interpretation of a claim covers a signal per se, the claim must be rejected under 35 U.S.C. 101 as covering non-statutory subject matter.

The USPTO recognizes that applicants may have claims directed to computer readable media that cover signals per se, which the USPTO must reject under 35 U.S.C. 101 as covering both non-statutory subject matter and statutory subject matter. The USPTO suggests the following approach. A claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 U.S.C. 101 by adding the limitation "non-transitory" to the claim. Such an amendment would typically not raise the issue of new matter, even when the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals per se. Furthermore its not clear if a computer usable medium is also a computer readable medium. The claims should be amended to include a *non transitory computer readable medium*.

Rejections Under 35 U.S.C. 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 89-99 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims recite various combination of full "compression" "partial compression", and just "compression" its not clear which or what compression is being refereed to when applicant recites just "compression."

Claims 55-61, 63-65, 67-68, 90 and 92 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Computer code is an abstract idea and therefore it is not clear what it means for it to be "non transitory" the claims should be amended to include a non transitory computer readable medium.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 8-10, 13, 34-35, 55 89, 91 and 94 rejected under 35 U.S.C. 103(a) as being unpatentable over Jouppi in view of Van Hook US 6,630,933

Re claim 1 Jouppi discloses a method of data compression comprising: grouping a plurality of pixel data into a plurality of tiles (each of the plurality of pixels could be considered its own tile or a group of pixels (tile) could share a particular pixel memory column 6 lines 1-10); prior to compression (note memory must be dynamically allocated before data can be stored into it and the compression completed) evaluating said tiles for compression suitability to determine if said tiles is to be fully compress partially compressed or uncompressed (dynamically allocate memory column 6 lines 15-20 note memory for "fragment triples" is dynamically allocated based on how many fragments cover the pixel (or group of pixels) designation of full compression corresponds to the dynamic allocation of only 1 fragment triple, partial compression corresponds to the dynamic allocation of 2 fragment triples and uncompressed corresponds to the dynamic allocation of 4 fragment triples), wherein said compression recognizes duplicate data (column 5 lines 15-20) and reduces amount of duplicate data stored within said tiles (column 5 lines 15-20); fully or partially compressing said tiles if said tiles are deemed

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suitable for said compression (dynamically allocate memory column 6 lines 15-20 note if 4 fragment tipples are stored for each pixel which does not compressed in relation to sparse sub sampling column 8 lines 35-38 if less are needed memory is saved) wherein said evaluation comprises determining that a tile is suitable for partial compression when a pixel is covered by a plurality of primitives (dynamically allocate memory column 6 lines 15-20 partial compression corresponds to be 2 fragment tipples being dynamically allocated note the number of fragment triples corresponds to the number of fragments (i.e. number of triangle primitives see column 3 line 60 through column 4 line 5)); and designating said tile for partial compression if it is deemed to be suitable (dynamically allocate memory column 6 lines 15-20 partial compression corresponds to 2 fragment tipples being dynamically allocated) and wherein partial compression comprises employing at least two color designations for a same tile to compress the data (column 5 lines 45-55 note each fragment triple stores a color designation column 5 lines 45-50); partially compressing the tile using a single bit to represent each of the at least two color designations (figure 6A-B column 6 lines 45-57 note a single bit is used to point to one of two "fragment triples").

Jouppi does not disclose wherein evaluating prior to compression comprises determining whether partial compression will result in memory space saving compared to uncompressed pixel data. Van Hook discloses wherein evaluating prior to compression comprises determining whether compression will result in memory space saving compared to uncompressed pixel data (See column 3 lines 25-40). It would have been obvious to amend Joppa to use the method of hook to determine if the tile

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should be stored in uncompressed format to avoid using more memory by applying a compression process (see column 3 lines 25-40) . Therefore it would have been obvious to combine Jouppi and Van Hook to reach the aforementioned advantage.

Re claim 2 Jouppi discloses wherein said pixel data is color information (column 5 lines 40-50)

Re claim 3 Jouppi discloses determining whether a tile is suitable for full compression; designating said tile for full compression if it is deemed to be suitable (dynamically allocate memory column 6 lines 15-20 full compression read to be 1 fragment tippie being dynamically allocated).

Re claim 4 Jouppi discloses determining whether said tile is wholly covered by a triangle primitive (column 3 lines 60-67, column 4 lines 1-10 note pixel (or tile) will have one fragment if it is wholly covered by a triangle primitive).

Re claim 5 Jouppi discloses wherein said step of compressing further comprises: storing a single color entry for each pixel in said tile (dynamically allocate memory column 6 lines 15-20 note if only one fragment is visible in the pixel, only one fragment will be stored).

Re claim 8 Jouppi discloses wherein said step of determining further comprises:
determining whether said tile is covered by less than two triangle primitives (note partial compression corresponds to the dynamic allocation of memory for two fragments, fragments correspond to the number of column 3 lines 60-67, column 4 lines 1-10 note the number of fragments corresponds to the number of primitives covering the pixel or tile,).

Re claim 9 Jouppi discloses wherein said step of compressing further comprises:
assigning an order to triangle primitives covering said tile (figure 6 fragment triples (corresponding to a fragment) are represented by 0 or 1); determining the color type of each sample of said tile (fragment triple columns 6 lines 25-40); creating a compressed format of color entries out of said pixel data (fragment triple columns 6 lines 25-40); creating a pointer to said compressed format (column 6 lines 35-55).

Re claim 10 Jouppi discloses wherein said pointer comprises a bit encoding associated with each sample in said tile, wherein each bit represents an index to entries in said compressed format column 6 lines 50-65).

Re claim 13 Jouppi discloses wherein said tiles are 2.times.2 in size (column 6 lines 1-5).

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Re claims 34, 35 and 55, these claims are similar to claims 1, 2 and 13 respectively only they claim a graphics processing apparatus for performing these methods. Jouppi also discloses with a graphics processing apparatus see figure 1.

Re claim 89 Jouppi discloses a method of data compression comprising: grouping a plurality of pixel data into a plurality of tiles (each of the plurality of pixels could be considered its own tile or a group of pixels (tile) could share a particular pixel memory column 6 lines 1-10); evaluating said tiles for compression suitability (dynamically allocate memory column 6 lines 15-20 note memory for "fragment triples" is dynamically allocated based on how many fragments cover the pixel (or group of pixels) designation of full compression corresponds to the dynamic allocation of only 1 fragment triple, partial compression corresponds to the dynamic allocation of 2 fragment triples and uncompressed corresponds to the dynamic allocation of 4 fragment triples), wherein said compression recognizes duplicate data (column 5 lines 15-20) and reduces amount of duplicate data stored within said tiles (column 5 lines 15-20); compressing said tiles if said tiles are deemed suitable for said compression (dynamically allocate memory column 6 lines 15-20 note if 4 fragment triples are stored for each pixel which does not compressed in relation to sparse sub sampling column 8 lines 35-38 if less are needed memory is saved) wherein said evaluation comprises : determining whether a tile is suitable for full compression by determining whether a tiles is wholly covered by a triangle primitive (column 3 lines 60-67, column 4 lines 1-10 note pixel (or tile) will have one fragment if it is wholly covered by a triangle primitive); Designating said tile for full

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compression if it is deemed suitable (dynamically allocate memory column 6 lines 15-20 full compression corresponds to 1 fragment triples being dynamically allocated) and designating said tile for partial compression if it is deemed to be suitable (dynamically allocate memory column 6 lines 15-20 partial compression corresponds to 2 fragment triples being dynamically allocated) and wherein partial compression comprises creating a compressed format of color entries out of said pixel data (figure 6A-B column 6 lines 45-57 note a single bit is used to point to one of two "fragment triples" which are a compressed format of color entries). creating a pointer to said compressed format wherein the pointer comprises a bit encoding associated with each sample in the tile (figure 6A-B column 6 lines 45-57 note a single bit is used to point to one of two "fragment triples").

Jouppi does not disclose wherein evaluating prior to compression comprises determining whether partial compression will result in memory space saving compared to uncompressed pixel data. Van Hook discloses wherein evaluating prior to compression comprises determining whether compression will result in memory space saving compared to uncompressed pixel data (See column 3 lines 25-40). It would have been obvious to amend Jouppi to use the method of hook to determine if the tile should be stored in uncompressed format to avoid using more memory by applying a compression process (see column 3 lines 25-40). Therefore it would have been obvious to combine Jouppi and Van Hook to reach the aforementioned advantage.

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Re claim 91 Jouppi discloses a method of data compression comprising: grouping a plurality of pixel data into a plurality of tiles (each of the plurality of pixels could be considered its own tile or a group of pixels (tile) could share a particular pixel memory column 6 lines 1-10); evaluating said tiles for compression suitability (dynamically allocate memory column 6 lines 15-20 note memory for "fragment triples" is dynamically allocated based on how many fragments cover the pixel (or group of pixels) designation of full compression corresponds to the dynamic allocation of only 1 fragment triple, partial compression corresponds to the dynamic allocation of 2 fragment triples and uncompressed corresponds to the dynamic allocation of 4 fragment triples), wherein said compression recognizes duplicate data (column 5 lines 15-20) and reduces amount of duplicate data stored within said tiles (column 5 lines 15-20); compressing said tiles if said tiles are deemed suitable for said compression (dynamically allocate memory column 6 lines 15-20 note if 4 fragment triples are stored for each pixel which does not compressed in relation to sparse sub sampling column 8 lines 35-38 if less are needed memory is saved) wherein said evaluation comprises : determining that a tile is suitable for partial compression when a pixel is covered by a plurality of primitives (dynamically allocate memory column 6 lines 15-20 partial compression corresponds to be 2 fragment triples being dynamically allocated note the number of fragment triples corresponds to the number of fragments (i.e. number of triangle primitives see column 3 line 60 through column 4 line 5)); and designating said tile for partial compression if it is deemed to be suitable (dynamically allocate memory column 6 lines 15-20 partial compression corresponds to 2 fragment triples being dynamically allocated).

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Jouppi does not disclose wherein evaluating prior to compression comprises determining whether partial compression will result in memory space saving compared to uncompressed pixel data. Van Hook discloses wherein evaluating prior to compression comprises determining whether compression will result in memory space saving compared to uncompressed pixel data (See column 3 lines 25-40). It would have been obvious to amend Joppa to use the method of hook to determine if the tile should be stored in uncompressed format to avoid using more memory by applying a compression process (see column 3 lines 25-40) . Therefore it would have been obvious to combine Jouppi and Van Hook to reach the aforementioned advantage.

Re claim 94 Jouppi discloses wherein partial compression comprises employing pointers to designation samples that correspond to an original color designation and a replacement color designation (column 6 lines 50-65 also see figure 4).

Re claim 95 Jouppi discloses wherein the method is carried out by a graphics processor
(column 6 lines 15-16)

Re claim 96 Jouppi discloses wherein the method is carried out by a graphics processor
(column 6 lines 15-16)

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Re claim 97 Jouppi discloses wherein the method is carried out by a graphics processor
(column 6 lines 15-16)

Claims 6, 12, 56-61, 63-65, 67-68, 90, 92 and 93 are rejected under 35 U.S.C. 103(a)
as being rendered obvious by Jouppi et al and Van Hook in view of Molnar.

Re claims 56-60, 63-65, 68, 90 and 92 These claims are substantially the same as
claims 1-5, 8-10, 13, 89 and 91 respectively only they are directed to a computer
readable medium storing a program for performing these methods. Jouppi does not
expressly discuss a computer readable medium. Molnar discloses performing his
method on a computer with software see figure 1 and column 4 lines 35-45. embodying
a computer readable medium to perform the compression method of Jouppi as done
Molnar is within the ordinary skill of the art and the result would be predictable.
Therefore it would have been obvious to combine Jouppi and Molnar.

Re claim 6 Jouppi discloses all of the elements of claim 3 and wherein said full
compression compresses said pixel data into one color values per pixel (see claim 5).
Joppi's color values are 5 bytes see column 5 lines 45-50. Joppie could easily
implemented to use one 32 bit word per color value (with one color values per pixel) as
in Molnar 9 lines 50-55, and the results (32 bits per color) would be predictable.
Therefore it would have been obvious to combine Jouppi and Molnar

Re claim 12 Jouppi discloses all of the elements of claim 1 and wherein said partial compression compresses said pixel data into two color values per pixel. Joppis color values are 5 bytes see column 5 lines 45-50. Joppie could easily implemented to use one 32 bit word per color value (with two color values per pixel) as in Molnar 9 lines 50-55, and the results (32 bits per color) would be predictable. Therefore it would have been obvious to combine Jouppi and Molnar

Re claim 61 Jouppi discloses all of the elements of claim 58 and wherein said full compression compresses said pixel data into one color values per pixel (see claim 60).. Joppi's color values are 5 bytes see column 5 lines 45-50. Joppie could easily implemented to use one 32 bit word per color value (with one color values per pixel) as in Molnar 9 lines 50-55, and the results (32 bits per color) would be predictable. Therefore it would have been obvious to combine Jouppi and Molnar

Re claim 67 Jouppi discloses all of the elements of claim 56 and wherein said partial compression compresses said pixel data into two color values per pixel. Joppi's color values are 5 bytes see column 5 lines 45-50. Joppie could easily implemented to use one 32 bit word per color value (with two color values per pixel) as in Molnar 9 lines 50-

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55, and the results (32 bits per color) would be predictable. Therefore it would have been obvious to combine Jouppi and Molnar

Re claim 93 Jouppi discloses a method comprising: grouping a plurality of pixel data into a plurality of tiles (each of the plurality of pixels could be considered its own tile or a group of pixels (tile) could share a particular pixel memory column 6 lines 1-10); evaluating said tiles for compression suitability (dynamically allocate memory column 6 lines 15-20 note memory for "fragment triples" is dynamically allocated based on how many fragments cover the pixel column 6 lines 10-20) wherein said compression recognizes duplicate data (column 5 lines 15-20) and reduces amount of duplicate data stored within said tiles (column 5 lines 15-20); compressing said tiles if said tiles are deemed suitable for said compression (storing the fragment data in the dynamically allocated memory column 6 lines 15-20 note if 4 fragment triples are stored for each pixel which does not compressed in relation to sparse sub sampling column 8 lines 35-38 if less are needed memory is saved)

wherein said evaluation comprises determining that a tile is suitable for partial compression (dynamically allocate memory column 6 lines 15-20 partial compression corresponds to be 2 fragment triples being dynamically allocated note the number of fragment triples corresponds to the number of fragments (i.e. number of triangle primitives see column 3 line 60 through column 4 line 5)); and designating said tile for partial compression if it is deemed to be suitable (dynamically allocate memory column 6 lines 15-20 partial compression corresponds to 2 fragment triples being dynamically

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allocated) wherein said step of compressing further comprises: assigning an order to triangle primitives covering said tile (figure 6 fragment triples (corresponding to a fragment) are represented by 0 or 1); determining the color type of each sample of said tile (fragment triple columns 6 lines 25-40); creating a compressed format of color entries out of said pixel data (fragment triple columns 6 lines 25-40);; creating a pointer to said compressed format (column 6 lines 35-55). Jouppi does not disclose wherein evaluating prior to compression comprises determining whether partial compression will result in memory space saving compared to uncompressed pixel data. Van Hook discloses wherein evaluating prior to compression comprises determining whether compression will result in memory space saving compared to uncompressed pixel data (See column 3 lines 25-40). It would have been obvious to amend Joppa to use the method of hook to determine if the tile should be stored in uncompressed format to avoid using more memory by applying a compression process (see column 3 lines 25-40) . Therefore it would have been obvious to combine Jouppi and Van Hook to reach the aforementioned advantage.

Jouppi does not expressly discuss a computer readable medium. Molnar discloses performing his method on a computer with software see figure 1 and column 4 lines 35-45. embodying a computer readable medium to perform the compression method of Jouppi as done Molnar is within the ordinary skill of the art and the result would be predictable. Therefore it would have been obvious to combine Jouppi and Molnar.

Allowable Subject Matter

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Claims 98 and 99 would be allowable if the rejections under 35 U.S.C. 112 were overcome. Claims 11 and 66 are objected to as being dependent from a rejected base claim but would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims and rejections under 35 U.S.C. 112 are overcome. Claims 11 and 66 contain the subject matter wherein said pointer comprises a bit encoding associated with each sample in said tile, wherein each bit represents an index to entries in said compressed format. Which is not found in the prior art of record, therefore these claims contain allowable subject matter.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEAN MOTSINGER whose telephone number is (571)270-1237. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bhavesh M Mehta/
Supervisory Patent Examiner, Art Unit 2624

Motsinger
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